sighting of the species at Yercaud on 28 and 30 December 1990 which happens to be the first record of the species wintering in South India[1].

Later while on a visit to Kolli hills one male Pied Ground Thrush was seen on 8 March 1992. The individual was seen inside a shola which is quite disturbed and near Sholaikadu (11° 18′ N, 78° 21′ E). This happens to be the first record of the species for Kolli hills.

The three sightings, all of them being in February and March along with Kryz Kazmierczak's sighting in December suggest that the species winters in Shevaroy and Kolli hills in South India.

The above observations were made during visits to Yercaud and Kolli hills as part of the Tree Shrew (*Anathana ellioti*) Project funded by World Wildlife Fund — US and coordinated by World Wide Fund for Nature — India (Tamil Nadu State Office).

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[1]Reported from Pt. Calimere (JBNHS 87 (2): 301) — *Editors.*

19. A NOTE ON THE REPRODUCTIVE BIOLOGY OF THE SPOTTED POND TURTLE, *GEOCLEMYS HAMILTONII*

The spotted pond turtle, *Geoclemys hamiltonii* is a widely distributed hardshell species in Northern India, Pakistan and Bangladesh (Das 1991, Colour Guide to the Turtles and Tortoises of the Indian Subcontinent). However, little is known about its biology. *Geoclemys hamiltonii* is common at a few localities in the flood plains of the river Brahmaputra such as Kaziranga National Park and Orang Wildlife Sanctuary. Locally this species is referred as *nal dura* (Assamese, nal = reed, dura = hardshell turtle). As part of the Wildlife Institute of India, Dehra Dun and US Fish and Wildlife Service Collaborative Project on Turtles and Tortoises, a survey was conducted in Kaziranga National Park, Assam, during the last week of March 1992.

Intensive survey was carried out for two days (i.e. March 25-26, 1992) in and around *Pubmetakani beel, Azgar camp,* Kokhra Range in Kaziranga National Park. Eighteen specimens of *Geoclemys hamiltonii* were collected of which nine were alive, eight shells and one freshly dead turtle. The sex was identified by the concavity of the plastron and long tail with thick base in male and absence of plastral concavity in female.

The largest specimen recorded was a male having a straight line carapace length (SCL) of 39 cm and carapace width (CW) of 22.5 cm. Among 18 individuals recorded 10 were males and 8 females (1:0.8). This indicates a balanced or slightly male biased sex ratio in the wild for *Geoclemys hamiltonii.*

Mean biometrics of 8 live specimens collected on the survey is given in Table 1. The size records show that both sexes attain equal size or males may be slightly larger.

One freshly dead turtle was obtained from *Pubmetakani beel* and cut open to examine reproductive status. This specimen was a female and measured 32 cm in SCL and had two sets of eggs. One set had twenty six well developed ellipsoidal white eggs. Ten of them measured an average of 43.5 mm (range 41-45 mm) in length, 26.0 mm (25-27 mm) in width and weighed 18.0 gm. Based on the size, shape, weight and texture of the egg shell we presume that these eggs were well developed and ready to be laid within a fortnight.

The other set of 36 eggs, all white in colour and round in shape measuring 10-20 mm were

TABLE 1
MEAN BIOMETRICS OF WILD *GEOCLEMYS HAMILTONII*

Biometrics	Male (n=4)	Female (n=4)	Mean (Both Sexes Combined) (n=8)
Carapace length (cm)	32.5	30.1	31.3
Carapace width (cm)	19.63	18.35	18.99
Plastron length (cm)	28.3	28.03	28.16
Shell height (cm)	12.0	12.08	12.04
Weight (gm)	3275	3037	3156

n = sample size.

undeveloped. This indicates that this species is capable of laying two or more clutches annually. Based on queries, Das (1991) speculated that *Geoclemys hamiltonii* may lay twice in a year. Our observation reveals that this species lays some time in mid April. Laying time of the second clutch and inter-clutch period is not known. The clutch size and size of the eggs is comparable with that of larger roof turtles namely, *Kachuga kachuga* and *Kachuga dhongoka.*

G. hamiltonii is probably the only one of larger freshwater Indian emydid turtles wherein males grow to female size or even larger. In the case of other larger Indian freshwater emydids, the three striped roof turtle, *Kachuga dhongoka*, Painted roof turtle, *Kachuga kachuga* and Crowned river turtle, *Hardella thurjii* males are significantly smaller than females.

The present report is the first record of breeding season, clutch size and sex ratio of the wild population of *G. hamiltonii.* Also, the specimen with SCL 39 cm is the largest size record of this species.

Funds for the field work was availed from the WII-USFWS Turtles and Tortoises Conservation Project sponsored through the Ministry of Environment and Forests, Government of India. We are thankful to the Chief Conservator of Forest (Wildlife), Assam for permission and the staff at Kaziranga National Park for help in the field.

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20. THE DISTRIBUTION OF THE ASIAN BROWN TORTOISE (*MANOURIA EMYS*) IN INDIA AND THE TAXONOMIC STATUS OF SUBSPECIES

(With a text-figure)

The Asian brown tortoise *(Manouria emys)*,the largest of Asian tortoises is widely distributed in Southeast Asian countries. In the subcontinent, it is recorded in Bangladesh and Northeast Indian states, namely Nagaland, Assam and Meghalaya (Smith 1931, Das 1991). Barring one locality record of the Asian brown tortoise in Meghalaya by Das (1991), no reliable record of this tortoise is available in other part of India after Smith (1931).

As a part of the Wildlife Institute of India, Dehra Dun and US Fish and Wildlife Service collaborative Turtle and Tortoise Project's survey programme, North Cachar Hills, Kaziranga National Park, Orang and Nameri Wildlife Sanctuaries in Assam and Namdapha Tiger Reserve, Pakhui, Itanagar, Mehao, D'Ering